

URGENT
ABDOMINAL
DIAGNOSTICS



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URGENT ABDOMINAL DIAGNOSTICS



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No. 1. THE DOCTOR'S POCKET
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No. 5. URGENT ABDOMINAL
DIAGNOSTICS.

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FOREWORD.

BUT a few years since, it mattered little, so far as the prospects of the patient were concerned, whether acute abdominal conditions were diagnosed speedily or tardily, accurately or otherwise. The best and the orthodox treatment for such conditions was "expectant"; with the appalling consequences which we now know to have been inevitable. In no department has modern surgery achieved more brilliant results than in the surgery of the abdomen. By its help, tens of thousands of men and women in the prime of life, who would hitherto have encountered an early and miserable death, have been restored to full health and vigour. The victory will be even more pronounced when it is more generally realised that successful

operation depends on promptness of diagnosis and quick decision as much as on manipulative skill in the operator.

This small booklet attempts to do no more than summarise a few of the salient facts which need to be ever at the front of the mind when faced with an abdominal emergency. Nor has it been practicable to mention all the pathological possibilities which the disordered abdomen presents. But the diseased conditions here dealt with include those which most often call for immediate surgical attention. In a report recently issued by one of our large hospitals, we find that fifty per cent. of all the acute abdominal cases admitted to the surgical wards in the course of a couple of years were cases of acute appendicitis: whilst strangulated hernia, perforated gastric and duodenal ulcers, acute obstruction

and cholecystitis accounted for a further thirty-five per cent. The contemporary student and practitioner are fortunate in having at their disposal many admirable text - books. Among recent volumes dealing especially with the diagnosis of surgical conditions two are outstanding, and should be on the shelf of every practising doctor. These are Mr. Zachary Cope's *The Early Diagnosis of the Acute Abdomen* (Oxford University Press. 10s. 6d.), and Mr. Hamilton Bailey's *Physical Signs in Clinical Surgery* (Wright. 21s.).

SOME HINTS AND APHORISMS.

“Prognosis depends as much upon the clinical recognition of early disease in the abdomen as upon anything, and it should be the constant endeavour of everyone to improve that intangible, unteachable but priceless possession which is sometimes denied to the clever and granted to the unlearned—clinical acumen.”—
Mr. ZACHARY COPE, in *The Practitioner*. Oct. 1929.

“Every pain has its distinct and pregnant signification, if we will but carefully search for it.”
—JOHN HILTON.

“*Examiner*. ‘Confronted with symptoms suggestive of internal haemorrhage, what would you do?’

“*Candidate.* ‘Feel the pulse, and watch for collapse.’ ”

“Probability is the guide of life.”—BISHOP BUTLER.

“Last night I thought this man very likely had a perforated ulcer, but he was not distended, so I left him alone ; this morning he is distended, so I send him up to you.”—*Note to surgeon from practitioner* ” ; quoted by Mr. ZACHARY COPE.

“In acute abdominal conditions, procrastination is the thief of life.”

“A delay of forty-eight hours, when obstruction is present, may clinch the diagnosis, but will usually prove fatal.”—Mr. E. R. FLINT.

“A diagnosis cannot be made in a test tube.”—Mr. HERBERT J. PATERSON.

“The presence of the classical symptoms in a case of intestinal obstruction is a clear indication that the case has been neglected.”
—Mr. W. RANKIN.

“Utilise and appreciate the enormous help in diagnosis that X-rays often give, but don't let the radiologist wag your tail.”

The most important addition to the armamentaria of the diagnostician is, not the laryngoscope or the cystoscope or even the X-ray generator, but aseptic surgery—which has made exploratory operations possible.

“If it is a question of doubt in diagnosis, you may often observe that one man solves the doubt when the others could not, and the way in which one man happened to solve it is this: he applied to the diagnosis of the

case some method of examination which the others had not applied.”
—Mr. C. B. LOCKWOOD.

Abdominal examination is usually best conducted with the patient lying in bed, his head on a low pillow and the body bare from breast to thigh. The patient's arms having been placed by his side, he should be asked to raise himself in bed without using them. If he cannot do this, or only with very great pain, acute abdominal condition is probable.

The hands having been warmed, and the patient's thighs and knees flexed, palpate the abdomen with the flat of the fingers, not with the tips. Use a minimum of pressure. Begin palpating at the point diagonally opposite to the part stated to be most painful and most tender. Examine the area complained of last of all.

Ascertain from the patient where the pain is most intense and also at what point it started.

Note the attitude of the patient in bed ; especially remembering the contrast between the restlessness that often accompanies colic and the dislike of all movement when peritonitis is present or threatened.

Observe if the abdomen expands when the chest expands in inspiration, or if the abdominal wall, or any part of it, remains motionless or appears to recede. Immobility is nearly always evidential of peritonitis present or imminent.

Observe the pulse, respiration rate and temperature ; remembering that the pulse is often almost normal in the gravest abdominal conditions, and that, occasionally, the breathing may be hurried.

In pneumonia, an immobile, painful abdominal wall is not unusual ; whilst, in coronary thrombosis, acute epigastric pain and vomiting are common. A marked increase in the respiration-pulse ratio, however, nearly always indicates a pulmonary condition.

High fever is unusual in the early stages of acute abdominal disorders. Acute pyelitis is an exception.

Always examine the chest and the urine before finally deciding on an abdominal diagnosis. Also test the knee-jerks and pupil-reactions.

Always percuss the whole abdominal area.

Test for epicritic hyperaesthesia by gently making vertical strokes with the point of a pin held obliquely so as not to scratch. It has been said that "cutaneous

hyperaesthesia is present in half the acute abdominal conditions which present themselves for diagnosis."

Remember that a general abdominal fulness may be due to "fat, fluid, flatus, faeces, or foetus."

Before diagnosing a pelvic tumour, have the bladder emptied by catheter. Remember Bailey's aphorism: "As far as tumours are concerned, the abdomen is a temple of surprise; and it is by our diagnostic humiliations when the abdomen is opened that we learn." To exclude tumour of the abdominal walls adopt Bailey's suggestion: "Ask the patient to shut his mouth, to hold his nose, and then to blow." A tumour that moves with the abdominal wall in respiration, and cannot be moved apart from the wall by palpation is certainly in the abdominal wall.

It is rarely safe to omit digital examination of the rectum. Especially, test the pelvic peritoneum for tenderness by pressing against the walls of the rectum. Pelvic abscess or inflamed appendix may often thus be detected.

The rectum having been emptied by enema, apply the pulp—not the tip—of the well-lubricated forefinger flat upon the anus, and gently and slowly introduce it. Beware of pressure from pessaries in the vagina. In making rectal examinations of female patients, first locate the cervix uteri and thus avoid a common error.

INGUINAL AND FEMORAL HERNIAS.

DIAGNOSTIC ANATOMY.

The external abdominal ring, formed by a split in the fibres of the external oblique aponeurosis, is about one inch from the middle line and about half-an-inch above the pubic spine. The internal abdominal ring, an opening in the fascia transversalis, is about three-fifths of an inch above Poupart's ligament, midway between the symphysis pubis and the anterior superior iliac spine. The inguinal canal, which is one-and-a-half to two inches long in the male, two to two-and-a-half inches long in the female, lies nearly parallel to the inner half of Poupart's ligament. An oblique inguinal hernia passes through the internal abdominal ring and along the inguinal

canal to the external abdominal ring. A direct inguinal hernia pushes through the posterior wall of the inguinal canal, opposite to the external abdominal ring, and passes across Hesselbach's triangle directly towards that ring. The epigastric artery can, in direct inguinal hernia, sometimes be—though in practice it hardly ever is—felt pulsating on the outer side of the hernial sac.

The femoral ring lies just beneath the inner extremity of Poupart's ligament. The crural canal, which is about one-third of an inch long, extends from the femoral ring to just below the saphenous opening in the fascia lata on the inner side of Scarpa's triangle. A femoral hernia descends along the crural canal to the saphenous opening, about one inch external to the pubic spine, and then upwards towards Poupart's ligament and forwards

towards the skin. Though it is more frequent in men than in women, inguinal hernia is much the commonest variety in both sexes and at all ages.

DIAGNOSIS.

If the hernia is strangulated or acutely obstructed, pain or graver symptoms will necessitate the examining of the patient lying in bed. Otherwise the patient should stand upright, naked from waist to thigh (female patients being, if necessary, provided with bathing triangles), with head erect or thrown slightly backward. Before palpating, watch the external abdominal ring, ask the patient to cough, and note if any visible sign of impulse. Then palpate, and ask the patient again to cough. If the patient is a male, invaginate the scrotal skin with the little finger and explore the inguinal canal, rotating

the finger so that the nail is toward the spermatic cord and the sensitive pulp of the finger against the external abdominal ring. If a swelling or lump is apparent, ascertain if it is possible to get above it. If the suspected hernia is external to the pubic spine when the thigh is abducted and no abnormality is detected in the inguinal canal, palpate over Scarpa's triangle, and observe if the swelling disappears when the patient lies down. An impulse on coughing is conveyed both by a hernia and by an encysted hydrocele of the cord. They are, however, not difficult to distinguish. If, with the finger and thumb, it is possible to get above the swelling, it is not a hernia. If the testis be gently pulled on, a hydrocele of the cord can be felt to descend with it. It should be remembered that a hernia may, on occasion, be

translucent. If the signs point to a hernia, yet no impulse is recognisable on coughing, it is probably irreducible. The patient may then, if not already in bed, be asked to lie down. Flex and internally rotate the thigh, then, gently and evenly, apply taxis. But no force should be employed, and no prolonged effort should be made to reduce the hernia. Never overlook the possibility of an undescended testicle.

A hernia in the inguinal fold may be femoral or inguinal. The finger in the inguinal canal should settle the doubt. If a hernia descend from the groin to the scrotum or labium, it is inguinal. If, when the thigh is abducted, the hernia is external to the spine of the pubis, it is femoral; if internal to the spine, it is inguinal. A hernia well below Poupart's ligament is femoral or obturator. The latter is

rarely diagnosed, except under operation, as it does not often form a distinct tumour, and lies deep among the adductor muscles.

When the patient coughs, a femoral hernia usually visibly bulges at the upper and inner extremity of Scarpa's triangle ; though, when it already forms a visible lump, it may lie above Poupart's ligament. A femoral hernia is, however, more laterally placed than an inguinal. An impulse on coughing may be conveyed by a psoas abscess, a psoas bursa, or a saphaena varix, all of which may be reducible like a hernia. It should be remembered, however, that a psoas abscess or bursa is external to the femoral vessels, whereas a femoral hernia lies internally to them. The swelling caused by a saphaena varix disappears when the patient is recumbent ; but, if pressure be then applied above the

swelling, a varix refills from below when the patient stands upright. The presence of varicose veins elsewhere will assist the diagnosis. The lymphatic glands in the groin may be grouped in two sets—one along Poupart's ligament, and one along the femoral vessels. Enlarged lymphatic glands are not reducible, and show no impulse on coughing. They should therefore rarely cause confusion in diagnosis.

If a hernia has suddenly appeared, or has become suddenly enlarged through strain, and if the swelling is tense, tender, painful, and shows no impulse on coughing, it is likely to be strangulated. The diagnosis is confirmed by the presence of complete constipation, vomiting, and other alarming symptoms of acute intestinal obstruction.

Umbilical and ventral hernias can hardly be mistaken.

ACUTE INTESTINAL OBSTRUCTION.

Acute intestinal obstruction is characterised by suddenness of onset. There is generally severe abdominal pain, oft-repeated vomiting (contrasting with the once-or-twice vomiting of appendicitis before peritonitis occurs), and absolute constipation. The contents of the bowel below the point of obstruction may be emptied naturally or by enema, but thenceforth neither faeces nor flatus are passed. The onset is nearly always accompanied by shock or collapse, though the degree of this is very variable. The pulse rate is at first slowed to well below the normal. The symptoms depend to some extent on the situation of the obstruction. If this be in the higher part of the small intestine, as sometimes,

though rarely, results from an impacted gall-stone, the pain and the shock are severe. Vomiting of green and bilious fluid comes on almost immediately ; but, though it persists, it does not become faeculent. Little, if any, abdominal distension occurs for some time. If the lower part of the small intestine be blocked, the initial symptoms are somewhat less violent. Vomiting does not usually start for a few hours, and is at first bile-stained though it later becomes faeculent. Faeculent vomiting, however, should generally be regarded as evidence of unfortunate if not culpable delay. In a few hours, the central part of the abdomen is noticeably distended. When the obstruction is in the large intestine, the initial symptoms are still less acute. Vomiting does not usually set in till later ; except in the case of intussusception, the

whole abdomen becomes greatly distended. Intestinal obstruction is easily distinguished from peritonitis by the absence, or comparative absence, of tenderness and rigidity, by the more marked distension, by the sub-normality of the temperature, by the recurrent or persistent vomiting, and by the mobility of the abdominal wall during respiration. The usual hernial sites should be examined for hernias that may have become strangulated. In the absence of external evidence enquiries should be made as to the existence of a reducible hernia which, although possibly strangulated, the patient might have reduced *en bloc* without any unusual difficulty. In all cases of apparent intestinal obstruction the urine should be examined, as acute or chronic kidney disease may cause symptoms closely simulating those of obstruction.

It is also well to test the knee-jerks and the pupil reactions in order to eliminate tabes.

Acute intussusception is a not infrequent cause of obstruction in infants and occasionally in older children. These are usually not ill-nourished specimens, as is the typical colitis child, but healthy, well-nourished and often over-fed. The condition shows itself by sudden, severe abdominal pain which causes the child to cry out and double up his legs. The pain is accompanied by shock, which is generally shown by extreme pallor of the face. In intussusception, constipation is not always absolute, but dried blood and mucus are passed *per anum* almost from the onset. In this, intussusception differs from colitis ; for in colitis the passage of blood and mucus is commonly preceded by simple diarrhoea without blood. At an early stage

of intussusception a sausage-like tumour can generally be felt in some part of the colon. Owing to the involvement of the caecum in the intussusception, the right iliac fossa appears to be empty. If the condition progresses, the lower end of the intussusception may be felt in the rectum, or may even be actually visible at the anus.

Obstruction in the large intestine, especially in patients over middle age, is most commonly caused by malignant disease, though, if the obstruction occurs quite suddenly, the possibility of volvulus should be borne in mind. In the latter, the patient is suddenly seized with severe localised abdominal pain. There is early, rapidly-increasing distension, beginning in the hypogastric region; and a rounded tense swelling may be observed in one of the flanks or iliac fossae.

Volvulus occurs most commonly in the sigmoid flexure.

Intestinal obstruction having been diagnosed or strongly suspected, no time should be lost before adopting surgical measures. Largely through delay, the mortality from this condition is still in the neighbourhood of thirty-five per cent. Purgatives should in no circumstances be given, but two successive enemas may be administered by the rectum ; the first to empty it, the second to test intestinal patency.

GASTRIC AND DUODENAL ULCERS.

A case of gastric ulcer generally yields a long history of "indigestion," accompanied by discomfort rather than pain. These attacks increase in frequency until, in the end, every meal is followed by pain, which is the chief and most constant symptom of ulcer of the stomach. This pain, which is localised in the epigastrium, sometimes radiating towards the costal arches and thence to the spine, usually comes on within an hour of taking food, though the interval is somewhat longer if the ulcer be situated near the pylorus. The pain generally increases in intensity for two or three hours, until the stomach is emptied of food. Flatulent distension of the

stomach, water-brash and belching are common accompaniments. Vomiting is by no means constant, and, in any event, is not often very pronounced, especially in the early stages. Haemorrhage, again, is not invariable; and, when it occurs, may be so small in amount as to be detectable only by chemical means. Sometimes, however, the haemorrhage is really serious. Unperforated gastric ulcer may be simulated by gallstones (the pain from which is commonly of much greater intensity and is not relieved by vomiting; nor does it bear any obvious relation to the taking of food). Appendicular gastralgia (which often continues for years without getting any worse) may be suspected when pain is brought on by physical exertion. The pain of intestinal stasis (which is nearly always accompanied by hypochloridia and hyposecretion) is

promptly relieved by rest and aperients, regardless of diet.

Duodenal ulcer is not easy to distinguish from ulcer situated near the pyloric end of the stomach. Curiously, whilst gastric ulcer is almost equally common in both sexes, duodenal ulcer is about four times as common in men as in women. The history of duodenal ulcer is characteristic, extending often over many years. The "dyspeptic" attacks, though they may possibly last for days together, are for a long stretch of time periodic; the patient feeling "quite all right" between the attacks. At first, discomfort rather than pain describes the chief symptom, though later the pain may be severe. This is usually epigastrically localised, radiating rather to the right than to the left side of the abdomen. The pain (at first due to hypersecretion) comes on not less

than two or three hours after meals, and generally continues until the next meal. It is a common observation that it often comes on in the small hours of the morning. The pain is temporarily relieved by food. In the later stages, when chronic gastritis and some degree of duodenal stenosis may be present, the pain often comes on much sooner after the taking of food. Vomiting is fairly common, but not universal; and the vomit is generally small in quantity. Haemorrhage, when it occurs, is generally a late, rather than an early symptom. Hypersecretion is common, but not invariable. Hyperchloridia recurring coincidentally with the attacks is almost pathognomonic. It should be remembered that the pain and many of the other symptoms associated with gastric and duodenal ulcer are symptoms not

peculiarly of ulcer but of gastritis, hyperacidity, or other accompanying conditions. Possible alternative causes for these conditions must, therefore, always be borne in mind.

PERFORATED GASTRIC OR DUODENAL ULCER.

The first successful operation for perforated gastric ulcer was performed only in the final decade of the last century ; but to-day early diagnosis and prompt surgical intervention spell the whole difference between life and death. Delay, however, is still all too common.

Perforation of a gastric or duodenal ulcer is marked by pronounced symptoms, dramatic in their suddenness and intensity. Usually without warning, the patient is stricken with severe, almost unbearable abdominal pain, at first epigastric, but quickly extending to the whole abdomen. So severe is the pain that the victim often falls to the ground

in agony, and manifests the signs of extreme collapse, with cold extremities, small, rapid pulse, and an expression of great anxiety. The abdominal wall is often seen to be retracted and extremely rigid, especially in its upper and central portions. In a typical case, these symptoms soon subside, the pain becoming bearable and the pulse slower and fuller, whilst a general feeling of comparative comfort supervenes. To the inexperienced, this is the deceptive period; for whilst in fact it affords the best moment for operation (it has been said that of those operated on whilst the pulse rate is under 100 nearly all recover, whilst of those not operated on until the pulse rate has reached 120 nearly all die), it is apt to lead the patient and his friends to imagine that things are on the mend and that no active treatment is called for. If, in

the absence of diagnosis, a full dose of morphia has been given soon after the onset, and the symptoms thus further masked, disaster is likely. For the apparent amelioration lasts but a few hours at the most ; after which much more sinister signs show themselves. The pulse rate steadily increases and the pulse becomes progressively smaller. The extremities grow cold, the abdomen becomes first distended and then tympanitic and all the manifestations of severe peritonitis follow.

The characteristic diagnostic points of perforation are the sudden onset and the intensity of the initial symptoms ; a history of previous attacks of " indigestion " ; the severe abdominal pain at the beginning ; the retraction of the abdominal walls ; extreme rigidity, especially of the upper parts of the rectus muscles ;

a sub-normal temperature ; and, after the first hour or two, marked tenderness of the pelvic peritoneum, easily detected by rectal, or, in the female patient, by vaginal examination. Even in the deceptive second stage, the muscular rigidity is extreme, no pressure being sufficient to overcome it, and the pelvic tenderness increases rather than lessens. It is not safe to rely for diagnosis on abnormalities of the pulse or of the pulse rate, or even on the general constitutional disturbance ; as these vary enormously from case to case. A sign that may sometimes help to clear up a doubtful diagnosis is given by a patch of percussion-resonance over the liver, about two-and-a-half inches above the border of the ribs, in the line of the centre of the axilla. When this is present, we can be pretty sure of perforation.

Among the conditions which have been mistaken for perforated gastric ulcer are these :

ACUTE PERFORATIVE APPENDICITIS.

This should easily be distinguishable by the history, by the rise of temperature, by the lesser pain, by the more definite localisation in the right iliac fossa, and, regrettably often, by more or less marked distension of the abdomen ; whilst muscular rigidity is far less pronounced. Rovsing's sign of appendicitis—pain in the right iliac fossa when pressure is applied to the left iliac fossa—is helpful in doubtful cases.

RUPTURED ECTOPIC GESTATION.

Here, again, the history should help. Rigidity is less marked, the pain and other symptoms are more pronounced in the lower part

of the abdomen, and there is usually obvious anaemia consequent on internal haemorrhage.

RENAL, BILIARY OR INTESTINAL COLIC.

In the first, some history of haematuria and, in the second, of jaundice, is commonly obtainable; whilst in both rigidity is usually absent or slight. There is no tenderness of the pelvic peritoneum, and the patient throws himself about in his pain. In renal colic, pain usually radiates to the testicle, and, in biliary colic, to below the shoulder-blade. Intestinal colic may be accompanied by considerable rigidity of the abdominal wall; but this is not board-like, as in perforation, and can generally be overcome by massage and manipulation. The presence or absence of tenderness gives little diagnostic help.

EARLY PLEURO-PNEUMONIA.

Examination of the chest generally prevents error. The ratio between the pulse and respiration frequencies is nearly always distinctive. Normally, this is about four to one ; if it is about two to one, the trouble is probably in the lungs. Abdominal rigidity may be present, but is not pronounced. Abdominal tenderness is absent.

CARCINOMA OF THE STOMACH.

There is, unfortunately, no truly reliable or characteristic sign of gastric carcinoma in its early and operable stage. Usually the patient is between forty and sixty years of age, at which period of life every case of persistent indigestion or gastric pain occurring in an individual who has not hitherto complained should be regarded with suspicion. By the time that marked wasting, severe anaemia, persistent vomiting, or the presence of a palpable tumour, stamps the diagnosis, surgical intervention is usually out of the question. The earliest manifestations of which we are aware are gastric discomfort, often not amounting to severe pain, after food, with flatulence and loss of appetite. From the beginning,

there is nearly always a noticeable loss of weight and strength, and some degree of anaemia. If the cancer involves the pylorus, vomiting occurs fairly early, the vomit often containing brownish altered blood; though the persistent presence of blood in the stools or the vomit commonly indicates a late stage of the disease. By means of the stomach-tube and an examination of the gastric contents after test meals, cancer of the stomach may often be recognised with a fair degree of probability earlier than would be possible otherwise. Impaired pyloric motility is an early sign, and a marked diminution of the total chlorides after a test meal, though not pathognomonic, is suggestive. X-ray examinations by expert radiographers, *if the findings are properly interpreted*, are often of great help in diagnosis.

It has been stated that not

more than one in ten of the cases of cancer of the stomach seen at hospital in this country is still at a stage where surgical measures have any chance of success. If the symptoms suggestive of early carcinoma are present and are not relieved after a few weeks of appropriate medical treatment, especially if accompanied by progressive loss of weight and strength, for which no other cause can be found, an exploratory operation is often but a measure of prudence. In gastric ulcer, many of the symptoms of carcinoma are also to be found ; but usually the pain after food is more pronounced in ulcer, the appetite is less impaired, and the loss of weight and strength less marked. The later stages of gastric carcinoma are characterised by symptoms which to the practised eye are unmistakeable. By those less experienced, however,

it is possible to confuse them with symptoms that sometimes accompany chronic nephritis, and the later stages of tuberculosis and syphilis. Though not usually observable in early cases, the supra-clavicular glands just at the outer and lower border of the left sterno-mastoid muscle are not infrequently found to be enlarged in carcinoma of the stomach.

PYLORIC STENOSIS.

Pyloric stenosis may result from the cicatrisation of a chronic ulcer, or from malignant disease. It is characterised by hypertrophy and, later, by dilatation of the stomach. It is nearly always accompanied by constipation, epigastric discomfort unrelated to recent meals, and very copious vomiting at intervals of a day or two, the vomit often including food taken on the previous day. It should be remembered that carcinoma of the stomach usually leads to achloridia, and duodenal ulcer to hyperchloridia. In these cases, X-ray examination is always desirable and nearly always illuminating.

APPENDICITIS.

DIAGNOSTIC ANATOMY.

Normally the ilio-caecal valve lies beneath a point one inch below the middle of a line connecting the umbilicus with the anterior superior iliac spine. The appendix branches out from the postero-lateral surface of the caecum, about one inch below the ilio-caecal valve. McBurney's point is situated one-and-a-half inches from the anterior superior iliac spine, in the line connecting that spine with the umbilicus. It is therefore about two inches above the base of the appendix when this is in its most usual position.

THE PRE-PERITONITIC STAGE OF APPENDICITIS.

It is said that "considerably over fifty per cent. of the acute

abdominal emergencies admitted to hospital are cases of appendicular inflammation." Of these a very large proportion are post-perforation cases. The hopefulness of the prognosis varies inversely—and almost in geometrical ratio—with the interval between the onset and the operation.

The characteristic signs and symptoms of appendicitis enumerated in many text-books are those of a comparatively late stage of the condition. Most of them are symptoms of peritonitis rather than of simple appendicitis. Pulse-rate, respiration-rate, and temperature, of which much used to be made, may at first show little variation from normal. In a case of appendicitis a marked accentuation of pulse-rate generally signifies the establishment of peritonitis. There is nearly always in appendicitis some history

of recent constipation or diarrhoea, and of recent digestive discomfort. Often there is a history of previous attacks of pain in the right iliac region.

The actual symptoms usually show themselves in this order: Firstly, *pain*, not necessarily directly associated with the taking of food; often, indeed, starting in the middle of the night. This pain commonly begins in the region of the umbilicus, afterwards moving to the right iliac fossa. When the appendix is retro-caecally placed, the pain often first appears in the right iliac area and later passes to the right flank. Secondly, *vomiting or nausea*. Thirdly, *local deep tenderness* on palpation over the base of the appendix (or, with less certainty, at McBurney's point). In some cases rectal examination may disclose a tenderness not otherwise clearly recognisable.

Fourthly, *some degree of fever* within twenty-four hours of the onset. A high temperature, say 103° , at the beginning of the illness, is against a diagnosis of appendicitis. In appendicitis a small gradual rise is usual, and therefore the temperature should be taken every two hours. Murphy, who first drew attention to the significance of the sequence of symptoms, said: "They occur almost without exception in this order, and when that order varies, I always question the diagnosis." Still, there are exceptions.

A number of other symptoms are common, but not sufficiently constant to be looked upon as other than confirmatory—at any rate in the early stage. Of these supplementary signs, the two of greatest importance and value are local rigidity of muscles, and localised epicritic hyperaesthesia. Surface hyperaesthesia is commonly

marked in the right iliac fossa over an area about one-and-a-half inches wide, running from the spine of the pubis to the anterior superior iliac spine. Muscular rigidity is generally found in the right iliac fossa or, in the case of retro-caecal appendicitis, in the right flank. The existence of an inflamed appendix adhering to the obturator internus is suggested if severe hypogastric pain is caused by flexing the right thigh to a right angle with the trunk, and then internally rotating it. Another useful test in cases of suspected retro-caecal appendicitis in which tenderness in the flank exists, consists in lightly pressing the finger on the tenderest spot, and directing the patient to raise his whole leg from the bed, with the knee extended. If the pain in the flank is markedly increased, retro-caecal appendicitis is likely.

POST-PERFORATION APPENDICITIS.

Perforation of an inflamed appendix is a very dangerous event; not merely because it indicates the beginning of fresh potentialities of mischief, but also because of the frequent amelioration of all the distressing symptoms of the pre-perforation stage, especially when the appendix was painfully obstructed. The patient often seems and feels so much better that active treatment may be again postponed. But, almost from the moment of perforation, the pulse usually becomes increasingly rapid, and this sign alone should raise suspicion. Moreover, the apparent improvement in symptoms does not long continue; for the signs of local or diffused peritonitis soon begin to manifest themselves.

When the appendix lies above the brim of the pelvis, perforation

is usually marked by a rise in the temperature, an increase of the pulse-rate, pronounced muscular rigidity over the appendix, great tenderness on pressure and, commonly, marked epicritic hyperaesthesia in the right iliac region, or—if the appendix be retro-caecal—in the right lumbar area. Often, also, a definite tender lump will be palpable ; though, in the case of a retro-caecal perforation, the swelling will be separated from the anterior abdominal wall by the caecum. It should be remembered that perforation in the latter situation gives rise to less obvious signs ; pain, vomiting and rigidity being all less marked.

When the appendix lies below the pelvic brim, the symptoms of perforation may be very obscure and deceptive. Any pre-existent pain in the right iliac fossa becomes easier and less localised ;

and very rarely is muscular rigidity observable. Usually, however, rectal examination reveals a tender swelling against the right pelvic wall. Flexing and internally rotating the thigh may cause pain, owing to the tension induced in the obturator internus. Irritation of the bladder or of the rectum by the inflamed tissues or their products may produce suggestive symptoms. If the condition remains unrecognised, a large pelvic abscess may develop, and the supra-pelvic abdomen become involved, with pronounced rigidity and the other characteristic signs. Bailey lays it down that "diarrhoea accompanied by the passage of mucus, in a patient who has not had dysentery or mucus colitis, is proof positive of a pelvic abscess." Among the conditions that may, in various ways, simulate appendicitis are ureteral renal calculus, pyelitis, perinephric abscess, in-

flamed or leaking duodenal ulcer, cholecystitis ; internal obstruction, caecal carcinoma, psoas abscess, perforated typhoid ulcer ; and, in women, salpingitis and ectopic gestation.

ACUTE PANCREATITIS.

Its symptoms are so variable, and so commonly such as are manifested by various other abdominal conditions that acute pancreatitis is rarely diagnosed before operation. Consequently about half the cases have fatal endings. The onset is usually as abrupt as that of perforated ulcer; and the pain and immediate shock are equally pronounced. The history of the case may help to exclude a diagnosis of gastric or duodenal ulcer; and the absence of general rigidity may still further help to differentiate. Generally, there is persistent vomiting or retching, and always there is epigastric tenderness; whilst the pain, which is very severe, is usually epigastric and lumbar. Cyanosis is common, particularly about the face. Slight jaundice

often but not invariably occurs. The subjects of acute pancreatitis are usually stout and on the wrong side of forty.

CHOLECYSTITIS.

Inflammation of the gall-bladder may be accompanied or unaccompanied by gall-stones. It most commonly occurs in fat middle-aged women, with a history of indigestion, flatulence and constipation. Pain is felt in the epigastrium or the right hypochondrium, often passing round to the back, and between the shoulders or below the scapula; a gall-stone entering or passing along the duct gives rise to pain often truly agonising. Some degree of jaundice is common, but not invariable. If the thumb be pressed over the fundus of the gall-bladder, and the patient be instructed to inspire deeply, a sudden catching of the breath suggests cholecystitis. The point of maximum tenderness is commonly a little below the top of

the ninth rib. Intense jaundice signifies obstruction of the common bile-duct, either by impacted gall-stones or by pressure from the carcinomatous head of the pancreas. When due to impacted gall-stones, there is generally a history of biliary cholic, and the jaundice varies in intensity. Carcinoma of the pancreas is commonly painless in onset, causes rapid wasting, and produces gastric symptoms as of pyloric stenosis. When the gall-bladder is enlarged and the jaundice steadily deepens, we may be pretty sure that pancreatic carcinoma and not cholelithiasis is at the bottom of the trouble.

CANCER OF THE LARGE INTESTINE.

When, in a person over forty, we find constipation of increasing severity—sometimes alternating into diarrhoea—with flatulence and occasional attacks of colicky pain, or when such an individual complains of sciatic pain lasting for more than a few days, rectal examination should be made with the finger and, if necessary, with the sigmoidoscope, in order to demonstrate or eliminate carcinoma. A fairly early symptom of intestinal cancer is the passage of mucus and blood—the latter possibly in quantities only recognisable by chemical tests. Owing to the frequent existence of a spurious diarrhoea, the patient may be unaware that he is constipated. By the time that wasting, vomiting and anaemia show themselves, the case has progressed beyond remedial treatment.

ECTOPIC GESTATION

It is important, when possible, to diagnose tubal gestation before the rupture of the sac ; though, for obvious reasons, this is comparatively rarely done. We cannot all hope to emulate Grandin, who said that : “ The man who suspects every woman of having this condition is the man who is least liable to err in diagnosis.” As the sac usually ruptures within the first two months of pregnancy, the very fact of pregnancy may not be suspected. The principal symptoms of the pre-ruptured stage are amenorrhoea, or some abnormality of menstruation for one or two months ; irregular one-sided pains in the hypogastrium ; sometimes periodical uterine bleeding ; often tenderness on palpation behind and below the

pubis ; absence of muscular rigidity ; slight enlargement of the uterus ; and the presence of a small rounded moveable lump to one or other side of the uterus, in the lateral fornix. The absence of fever and the presence of a moveable swelling, especially if accompanied by some bleeding from the uterus, distinguish a tubal pregnancy from a pelvic appendicitis, with which it has sometimes been confused.

The rupture of an ectopic gestation sac, usually presents marked and distinctive symptoms. Severe intra-peritoneal haemorrhage is common, and this may be so great as quickly to prove fatal. Fainting, collapse, and obvious anaemia, with sudden abdominal pain, indicate the principal danger. The temperature is sub-normal, the pulse feeble and usually rapid, and the abdominal wall flaccid. When the haemorrhage is less

violent, all these symptoms may be less marked, but there is nearly always recognisable anaemia, and the lower part of the abdomen is usually tender on the affected side, and often strikingly distended. Douglas's pouch may be filled with hardened blood-clot. These sub-acute cases may be confused with pyo-salpinx, and with pelvic appendicitis, but the history of the case, and the symptoms suggestive of internal haemorrhage should generally serve to distinguish. On vaginal examination, all the fornices, and not merely the lateral and posterior ones, as in inflammatory conditions, show tenderness.

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